PHOTOGRAPHIC DISCOVERY OF A NEW CRATER ON THE MOON.

By Professor L. WEINEK, of Prague.*

On the first day of March of last year I made a thorough examination of an excellent photograph of the moon on glass, which was taken on August 27th, 1888 in the focus of the 36-inch giant telescope of the Lick Observatory at Mount Hamilton. I had constructed a suitable apparatus for this purpose, and subjected *Mare Nubium* (Sea of Clouds), which is situated in the southeast quadrant of the moon, to a careful comparison with the very best and most complete maps in existence. In the course of this investigation I noticed a small and distinct crater on the photograph, which was not shown on any of the maps. If we follow Section VIII of SCHMIDT's large map, the diameter of which is two metres, the position of the crater will be: $\lambda = -9°.0$ (longitude east); $\beta = -25°.7$ (latitude south). As the photograph in question was taken shortly before last quarter, (moon's age = 20 days, with *Descartes* and *Julius Cæsar* on the terminator,) the small crater presents its west wall as illuminated, while the eastern interior lies in shadow. I estimate the size of this crater to be at least 1783 kilometres = 0.24 geographical miles, which would give it a diameter of one millimetre on SCHMIDT's map. Now as this distinguished selenographer, whose maps of the moon show more detail than any others, presents this locality as perfectly level and having no craters of half its size in the immediate vicinity, it appears difficult to imagine that the recording of this new object was simply overlooked by him. Possibly the small elevation to the northeast represents SCHMIDT's conception of this crater; but in this case it would become necessary to presume that considerable errors in position had been made in this part of Section VIII. On the other hand, under the same supposition, a crater (shown only on LOHRMANN's map) situated a little to the west and south, but whose diameter would be 2.6 times too great, might be looked upon as being the object in question.

Although attempts were made to identify the new crater on other Lick Observatory plates (of which the Prague Observatory

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possesses more than fifty—owing to the kindness of Professor E. S. HOLDEN) they were not successful in the beginning, and it was for this reason that the publication of the discovery of this crater was postponed.

It furthermore seemed desirable to wait until an optical verification, by an ocular observation at the telescope, could be obtained. All attempts made at Prague with this object in view have as yet been unsuccessful, owing to unfavorable weather at the times of last quarter of the moon.

Researches made in this direction by the expert observers, Messrs. E. S. HOLDEN, at Mount Hamilton, and T. G. ELGER, at Bedford, England, to whom I had furnished drawings of the new crater and vicinity,—enlarged twenty times,—showed no better results.

On the first day of July of last year I finally succeeded in obtaining, by other means, the desired proof of the existence of this crater, while I was engaged in making a thorough examination—under a magnification of 20, 30 and 40 diameters, of a negative of the moon, which was made on Sept. 22d, 1890 at $8^h\ 3^m$ Pacific standard time ($= 17^h\ 0^m.7$ Prague mean time), viz.: Sept. 23d at $5^h\ 0^m.7$ A. M., which Professor HOLDEN had sent me for the purpose of enabling me to make drawings of the numerous fine rills in the vicinity of a crater, which I had discovered photographically in *Sinus Medii* on May 22d, 1891. This plate was made shortly after first quarter and the shadows are on the opposite side to those on the plate of Aug. 27th, 1888. The new crater is also shown on this plate and can be seen without difficulty, the east wall being in bright light and the westerly interior showing a dark shading. Its position agrees accurately with the location given above. This plate also shows a distinct formation of rills, to the east of the new crater, at a distance of about half a geographical mile, extending from south to north in the shape of a small Greek *zeta* (the middle corner being flattened) which is at least five geographical miles long and about 713 metres, or more than 2000 feet, wide. This rill has also not as yet been seen by others; I have found it to be plainly visible on a plate taken at the Lick Observatory on November 3d, 1890, at $14^h\ 0^m$ P. s. t. (moon's age $21^d\ 5^h$) being illuminated from the opposite side and apparently extending in a northerly direction as far as *Birt*.

The new crater may be easily found with the aid of the following explanation. It is well known that in *Mare Nubium* to

the east of the ring plane *Thebit*, there is an almost perfectly straight mountain range, 14 miles long, which MAEDLER calls β and which, according to this prominent selenographer, has an average elevation of 157 toises, or 306 metres. MAEDLER compares the shape of this remarkable and surprising object to a cane, the upper end of which is ornamented by antlers; in small instruments it looks like a straight sword with a handle in the shape of a cross. To the east and near the centre of it is situated the deep ring plain *Birt* (MAEDLER = *Thebit* B), adjoining which on the southwest is a small crater. The diameter of *Birt* is nearly 2.5 geographical miles. Now, by starting from the center of this ring plain and proceeding in an exactly southerly direction, to a distance five times as great as its diameter, the new crater will be found. To the northeast of it, at a distance of five and nine geographical miles, respectively, there are two well known large craters of similar characteristics. It would naturally be of great value if a number of astronomers, who are provided with sufficiently powerful telescopes, would direct their attention to the optical verification of this crater, which was discovered by the aid of photography alone.

PRAGUE, July 3, 1892.

NOTE ON THE AUGUST METEORS OF 1892.

By Professor DANIEL KIRKWOOD.

The well known epoch of the August meteoric shower has just passed. The phenomena have been watched by the present writer for nearly half a century, and the failure of 1892 has been the most complete that has occurred in clear weather since the commencement of his observations. At Riverside this year shooting stars have not been more numerous from the 8th to the 11th of August than on ordinary nights. In fact not more than half a dozen were counted, though the evenings were quite clear on the 9th and 10th. Unless the experience elsewhere has been different, this fact must be regarded as indicating a notable gap in the cluster of August meteors. The writer has counted in former years from ten to a hundred meteors per hour. It will be interesting to watch next year to learn whether we have entered a wide chasm in the meteor ring, or whether the interruption is merely temporary.

RIVERSIDE, August 11.